

REMARKS

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims are respectfully requested.

Status of Claims

Claims 44-81 are pending in the application.

The Telephone Interview

Initially, Applicants wish to thank the Examiner, Jianye Wu, for granting and attending the telephone interview with Applicants' Representative on September 22, 2009, in which the rejection of independent claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78 in view of Bing et al. (US 20040131084) and Razavilar et al (US 20030181211) was discussed.

During the Interview, Applicants' representative explained that the Bing reference merely describes using a plurality of carriers or subcarriers of an OFDM method to code uplink information from a plurality of terminals to a base station, such that the terminals use different carriers or subcarriers of an OFDM symbol. More specifically, the Bing reference describes coding the information transmitted back from the terminals to the base station by

varying the physical properties, in particular the energy, frequency or duration of the carrier signals of the connection to the base station (paragraph [0020]).

Applicants' representative also explained that, although the Bing reference generally refers to the use of the OFDM method for coding uplink information, the Bing reference does not describe the specific combination of the limitations of independent claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78.

Specifically, for example, claim 44 requires dividing a frequency bandwidth of a channel into a plurality of frequency sub-channels, allocating said plurality of frequency sub-channels to the plurality of stations based on received signal strength of the stations, transmitting a multicast transmission to the plurality of stations over substantially the entire frequency bandwidth of the channel, and receiving an acknowledgement. Claim 44 clearly requires that the same frequency channel is utilized for "downlink" transmission of a multicast transmission from a wireless device to a plurality of stations as well as for "uplink" transmission/ of acknowledgments from the stations to the wireless device. For example, as explained by Applicant's representative, a multicast packet 210 (Fig. 2) is transmitted over substantially the entire frequency bandwidth of a certain channel (spanning over substantially the entire vertical axis of Fig. 2 and including all the frequency sub-channels 250 and 270), and "uplink" acknowledgment signals 260 (Fig. 2) are transmitted/received over frequency sub-channels 250 (Fig. 2) allocated within the same frequency bandwidth of the certain channel, which was utilized for the "downlink" multicast transmission (see also description in paragraphs [0018]-[0022], [0024], [0033] and/or [0034] of the present Application).

Applicant's representative further explained that the Bing reference does not describe at least transmitting/receiving a multicast transmission over substantially the entire frequency bandwidth of a certain channel and receiving acknowledgement signals over a plurality of frequency sub-channels, which result from the dividing the same certain frequency bandwidth of the channel which was used for the multicast transmission.

Applicants' representative asserted that, after carefully reviewing the entire reference of Bing, it appears that there is no mentioning in Bing, which describes or suggests utilizing a frequency channel for transmission of a multicast transmission from a wireless device to a plurality of stations as well as utilizing sub-channels of the same frequency channel, which was used for the multicast transmission, for transmitting acknowledgments from the stations back to the wireless device.

Applicants' representative emphasized that the mentioning of Bing of the OFDM method merely relates to the method of coding uplink information from a plurality of terminals to a base station. Bing does not describe any details other than the general, well known, properties of the OFDM method. This general description of the OFDM method does not suggest in any way the specific requirement of utilizing a certain frequency channel for transmission of a multicast transmission from a wireless device to a plurality of stations as well as utilizing sub-channels of the same certain frequency channel, which was used for the multicast transmission, for transmitting acknowledgments from the stations back to the wireless device.

Applicants' representative asserted that this deficiency of the Bing reference cannot be cured by the Razavilar reference.

The Examiner advised Applicants' representative that further search and consideration are required.

CLAIM REJECTIONS

35 U.S.C. § 103 Rejections

In the Office Action, the Examiner rejected claims 44-58, 62, 64, 66, 68, 72-73 and 78-79 under 35 U.S.C. § 103(a), as being unpatentable over Bing et al. (U.S. Publication No. 2004/0131084 A1) in view of Razavilar et al. (U.S. Publication No. 20030181211 A1). Specifically, the Examiner contended that Bing et al. discloses a method, a processor-readable storage medium, a wireless device and a processor for transmitting between a wireless device and a plurality of stations, including a channel divider to divide a frequency bandwidth of a channel into a plurality of frequency sub-channels; a transmitter to transmit a multicast transmission to the plurality of stations over substantially the entire frequency bandwidth of the channel; and a receiver to receive acknowledgment signals from the plurality of stations over the plurality of allocated frequency sub-channels. The Examiner acknowledged that Bing does not explicitly disclose an allocator to allocate the plurality of frequency sub-channels to the plurality of stations based on received signal strength of the stations. However, the Examiner contended that Razavilar discloses a communication device selecting a channel from a plurality of channels based on received signal strength. The Examiner also contended that it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Bing with Razavilar.

Applicants respectfully traverse the rejection of claims 44-58, 62, 64, 66, 68, 72-73 and 78-79 under 35 U.S.C. § 103(a), because a prima facie case of obviousness has not been established, as discussed below.

As is well established, in order to establish a prima facie case of obviousness, the prior art references must teach or suggest all the claim limitations.

As discussed in detail below, Applicants respectfully submit that Bing et al. and/or Razavilar et al, alone or in combination, do not disclose, teach or fairly suggest one or more of the features recited by independent claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78. For example, Applicants respectfully submit that Bing et al. and/or Razavilar et al, alone or in combination, do not describe, teach or fairly suggest, dividing a frequency bandwidth of a channel into a plurality of frequency sub-channels, allocating said plurality of frequency sub-channels to the plurality of stations based on received signal strength of the stations, transmitting a multicast transmission to the plurality of stations over substantially the entire frequency bandwidth of the channel, and receiving acknowledgement signals from the plurality of stations over said plurality of allocated frequency sub-channels, as recited in paraphrase, by independent claims 44, 50, 53, 56, 59, 72 and 78; and/or receiving at a station an allocation of a frequency sub-channel of a plurality of frequency sub-channels within a frequency bandwidth of a channel, wherein said frequency sub-channel is allocated to the station based on a received signal strength of the station; receiving a multicast transmission from the wireless device over substantially the entire frequency bandwidth of the channel; and transmitting from the station to the wireless communication device an acknowledgment signal over the frequency sub-channel allocated to the station, as recited in paraphrase, by independent claims 62, 64, 66, 68, 70, 72, and 78.

For example, in one demonstrative embodiment, a multicast packet 210 (Fig. 2) is transmitted over substantially the entire frequency bandwidth of a certain channel (spanning over substantially the entire vertical axis of Fig. 2 and including all the frequency sub-channels 250 and 270), and “uplink” acknowledgment signals 260 (Fig. 2) are transmitted/received over frequency sub-channels 250 (Fig. 2) allocated within the same frequency bandwidth of the certain channel, which was utilized for the “downlink” multicast transmission (see also description in paragraphs [0018]-[0022], [0024], [0033] and/or [0034] of the present Application).

As discussed below, Applicants respectfully traverse the Examiner’s contention that Bing et al. describes a channel divider to divide a frequency bandwidth of a channel into a plurality of frequency sub-channels; a transmitter to transmit a multicast transmission to the plurality of stations over substantially the entire frequency bandwidth of the channel; and a receiver to receive acknowledgment signals from the plurality of stations over the plurality of allocated frequency sub-channels (within the same channel used for the multicast).

It is respectfully asserted that, in the portions of Bing et al. cited by the Examiner, Bing et al. merely describes a base station BS communicating with terminals MT1, MT2 and MT3 via a downlink DL from the base station to the terminals, to transmit parallel identical data from the base station to the terminals; and via an uplink UL from the terminals to the base station, to transmit information from the terminals to the base station (paragraph [0037], Fig. 1). Bing et al. also describes coding the information transmitted back from the terminals by varying the physical properties, in particular the energy, frequency or duration of the carrier signals of the connection to the base station (paragraph [0020]). Specifically, Bing et al. describes using a plurality of carriers of an OFDM method to code the information, such

that the terminals use different carriers of an OFDM symbol (paragraphs [0020], [0046], Figs. 9, 10, 11). It is respectfully asserted that Fig. 9 of Bing et al. merely illustrates feedback transmission of “ACK”/“NACK” responses from the terminals back to the base station and storage of the responses in a table; and Figs. 10 and 11 of Bing et al. merely illustrate the common access of the terminals to carriers of a common OFDM symbol for transmission of the responses.

Applicants respectfully traverse the Examiner’s contention that Bing et al. describes dividing a frequency bandwidth of a channel into a plurality of sub-channels; transmitting a multicast transmission to the plurality of stations over substantially the entire frequency bandwidth of the channel; and receiving an acknowledgement from a station over the sub-channel allocated thereto.

It is respectfully asserted that Bing et al. does not disclose, teach or fairly suggest at least utilizing a frequency channel for transmission/reception of a multicast transmission from a wireless device to a plurality of stations as well as for transmission/reception of acknowledgments from the stations to the wireless device. Specifically, it is asserted that Bing et al. does not disclose, teach or fairly suggest at least transmitting/receiving a multicast transmission over substantially the entire frequency bandwidth of a channel and receiving/transmitting acknowledgement signals over a plurality of frequency sub-channels, which result from the dividing of the frequency bandwidth of the channel. It is respectfully asserted, that in the portions of Bing et al. cited by the Examiner (paragraphs [0020] and [0037]), Bing et al. merely describes performing DL transmissions from the BS to the terminals and performing UL transmissions from the terminals to the BS.

Applicants could not find any mentioning in Bing et al., which describes or suggests utilizing a frequency channel for transmission/reception of a multicast transmission from a wireless device to a plurality of stations as well as utilizing sub-channels of the same frequency channel, which was is for the multicast transmission, for transmitting/receiving acknowledgments from the stations to the wireless device.

Applicants emphasize that the mentioning of Bing of the OFDM method merely relates to the method of coding uplink information from a plurality of terminals to a base station. Bing does not describe any details other than the general, well known, properties of the OFDM method. This general description of the OFDM method does not suggest in any way the specific requirement of utilizing a certain frequency channel for transmission of a multicast transmission from a wireless device to a plurality of stations as well as utilizing sub-channels of the same certain frequency channel, which was used for the multicast transmission, for transmitting acknowledgments from the stations back to the wireless device.

These deficiencies of Bing et al. cannot be cured by the description of Razavilar et al.

In view of the above, it is respectfully asserted, that Bing et al. fails to teach or fairly suggest all elements of claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78, at least because Bing et al. and/or Razavilar et al, alone or in combination, do disclose, teach or fairly suggest dividing a frequency bandwidth of a channel into a plurality of frequency sub-channels, allocating said plurality of frequency sub-channels to the plurality of stations based on received signal strength of the stations, transmitting a multicast transmission to the plurality of stations over substantially the entire frequency bandwidth of the channel, and receiving

acknowledgement signals from the plurality of stations over said plurality of allocated frequency sub-channels, as recited in paraphrase, by independent claims 44, 50, 53, 56, 59, 72 and 78; and/or receiving at a station an allocation of a frequency sub-channel of a plurality of frequency sub-channels within a frequency bandwidth of a channel, wherein said frequency sub-channel is allocated to the station based on a received signal strength of the station; receiving a multicast transmission from the wireless device over substantially the entire frequency bandwidth of the channel; and transmitting from the station to the wireless communication device an acknowledgment signal over the frequency sub-channel allocated to the station, as recited in paraphrase, by independent claims 62, 64, 66, 68, 70, 72, and 78.

Furthermore, it is respectfully submitted that independent claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78 are patentable, and thus allowable, over any combination of the prior art references on record. In this regard, it is noted that the distinguishing features of independent claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78, as discussed above, would not have been obvious at the time the invention was made to a person skilled in the art, in view of Bing et al., alone or in combination with any of the other cited references on record, including the Kapoor et al. reference discussed below in connection with claims 59-61, 70 and 71, the Hayashi et al. reference discussed below in connection with claims 63, 65, 67, 69, 71 and 81, and/or the Senga et al. reference discussed below in connection with claims 74-77 and 80.

In view of the above, it is respectfully submitted that independent claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78 are patentable over Bing et al. and/or Razavilar et al. Accordingly, it is respectfully requested that the rejection of claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78 under 35U.S.C. §103(a) be withdrawn.

Claims 45-49 depend, directly or indirectly, from independent claim 44 and incorporate all the elements of this claim as well as additional distinguishing features. Claims 51-52 depend directly from independent claim 50 and incorporate all the elements of this claim as well as additional distinguishing features. Claims 54-55 depend directly from independent claim 53 and incorporate all the elements of this claim as well as additional distinguishing features. Claims 57-58 depend directly from independent claim 56 and incorporate all the elements of this claim as well as additional distinguishing features. Claim 73 depends directly from independent claim 72 and incorporates all the elements of this claim as well as additional distinguishing features. Claim 79 depends directly from independent claim 78 and incorporates all the elements of this claim as well as additional distinguishing features. Therefore, it is respectfully submitted that claims 45-49, 51-52, 54-55, 57-58, 73, and 79 are patentable, and thus allowable, at least for the reasons set forth above.

Accordingly, it is respectfully requested that the rejection of claims 45-49, 51-52, 54-55, 57-58, 73, and 79 under 35 U.S.C. §103(a) be withdrawn.

In the Office Action, the Examiner rejected claims 59-61 and 70 under 35 U.S.C. § 103(a), as being unpatentable over Bing et al. in view of Razavilar et al., and further in view of Kapoor et al. (U.S. Patent No. 6,795,424).

In view of the above discussion with reference to claims 44, 50, 53, 56, 62, 64, 66, 68, 70, 72 and 78, it is respectfully asserted that Bing et al., Razavilar et al. and/or Kapoor et al., alone or in combination, do not disclose, teach or fairly suggest at least a channel divider to divide a frequency bandwidth of a channel into a plurality of frequency sub-channels; an

allocator to allocate said plurality of frequency sub-channels the plurality of stations based on received signal strength of the stations; a transmitter to transmit a multicast transmission to said plurality of stations over substantially the entire frequency bandwidth of the channel; and a receiver to receive acknowledgement signals from said plurality of stations over said plurality of allocated frequency sub-channels, as recited by independent claim 59; and/or receiving at a station an allocation of a frequency sub-channel of a plurality of frequency sub-channels within a frequency bandwidth of a channel, wherein said frequency sub-channel is allocated to the station based on a received signal strength of the station; receiving a multicast transmission from the wireless device over substantially the entire frequency bandwidth of the channel; and transmitting from the station to the wireless communication device an acknowledgment signal over the frequency sub-channel allocated to the station, as recited in paraphrase, by independent claim 70.

Therefore, it is respectfully submitted that independent claims 59 and 70 are patentable over Bing et al. in view of Kapoor et al.

Accordingly, it is respectfully requested that the rejection of claims 59 and 70 under 35 U.S.C. §103(a) be withdrawn.

Claims 60-61 depend directly from independent claim 59 and incorporate all the elements of this claim as well as additional distinguishing features. Therefore, it is respectfully submitted that claims 60-61 are patentable, and thus allowable, at least for the reasons set forth above.

Accordingly, it is respectfully requested that the rejection of claims 60-61 under 35 U.S.C. §103(a) be withdrawn.

In the Office Action, the Examiner rejected claims 63, 65, 67, 69 and 81 under 35 U.S.C. § 103(a), as being unpatentable over Bing et al. in view of Razavilar et al. and further in view of Hayashi et al. (U.S. Publication No. 20030147392).

Claim 63 depends directly from independent claim 62 and incorporates all the elements of this claim as well as additional distinguishing features. Claim 65 depends directly from independent claim 64 and incorporates all the elements of this claim as well as additional distinguishing features. Claim 67 depends directly from independent claim 66 and incorporates all the elements of this claim as well as additional distinguishing features. Claim 69 depends directly from independent claim 68 and incorporates all the elements of this claim as well as additional distinguishing features. Claim 81 depends directly from independent claim 78 and incorporates all the elements of this claim as well as additional distinguishing features. Therefore, it is respectfully submitted that claims 63, 65, 67, 69 and 81 are patentable, and thus allowable, at least for the reasons set forth above.

Accordingly, it is respectfully requested that the rejection of claims 63, 65, 67, 69 and 81 under 35 U.S.C. §103(a) be withdrawn.

In the Office Action, the Examiner rejected claim 71 under 35 U.S.C. § 103(a), as being unpatentable over Bing et al. in view of Razavilar et al. and Kapoor et al. and further in view of Hayashi et al.

Claim 71 depends directly from independent claim 70 and incorporates all the elements of this claim as well as additional distinguishing features. Therefore, it is respectfully submitted that claim 71 is patentable, and thus allowable, at least for the reasons set forth above.

Accordingly, it is respectfully requested that the rejection of claim 71 under 35 U.S.C. §103(a) be withdrawn.

In the Office Action, the Examiner rejected claims 74-77 and 80 under 35 U.S.C. § 103(a), as being unpatentable over Bing et al. in view of Razavilar et al. and further in view of Senga et al. (US 20020065928).

Claims 74-77 depend, directly or indirectly, from independent claim 72 and incorporate all the elements of this claim as well as additional distinguishing features. Claim 80 depend directly from independent claim 78 and incorporate all the elements of this claim as well as additional distinguishing features. Therefore, it is respectfully submitted that claims 74-77 and 80 are patentable, and thus allowable, at least for the reasons set forth above.

Accordingly, it is respectfully requested that the rejection of claims 74-77 and 80 under 35 U.S.C. §103(a) be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, the pending claims are deemed to be allowable. Their favorable reconsideration and allowance are respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 50-4238.

Respectfully submitted,

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By their Representatives,

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